Information Technology Laboratory

Computer Security Division

National Institute of Standards and Technology

September 6, 2007

NIST Information Technology Laboratory
Computer Security Division

Mission

- Provide standards and technology to protect information systems against threats to the confidentiality of information, integrity of information and processes, and availability of information and services in order to:
- Build trust and confidence in Information Technology (IT) systems.

Major FY07 Activities

- Key Initiatives
  - Secure Hash
  - Security Metrics
  - Security Content and Other C&A Automation Initiatives
  - Federal Desk Top Security Configuration Activities
  - Security Product Assessment Requirements and Methods
- Security support to ITL and other NIST programs
  - Voting
  - Health Care IT
  - ITL Program Initiatives
    - Support Identity Management Program
    - Help establish other programs (e.g., Cyber Security, Trustworthy Networking, Trustworthy Software)
- Maintenance of existing body of standards and guidelines in response to evolution of threat technologies and institutional environments
- Integrate support to national and international standards bodies (e.g., ANSI, ISO, IEEE, IAB/IETF, ICAO)
- General technical support to requests from OMB and other EOP organizations, GAO and Congressional staff, individual Departments and Agencies, other DoC organizations, and other NIST organizations (e.g., CNSS, TWIC, WHTI, E-Passport, REAL ID).

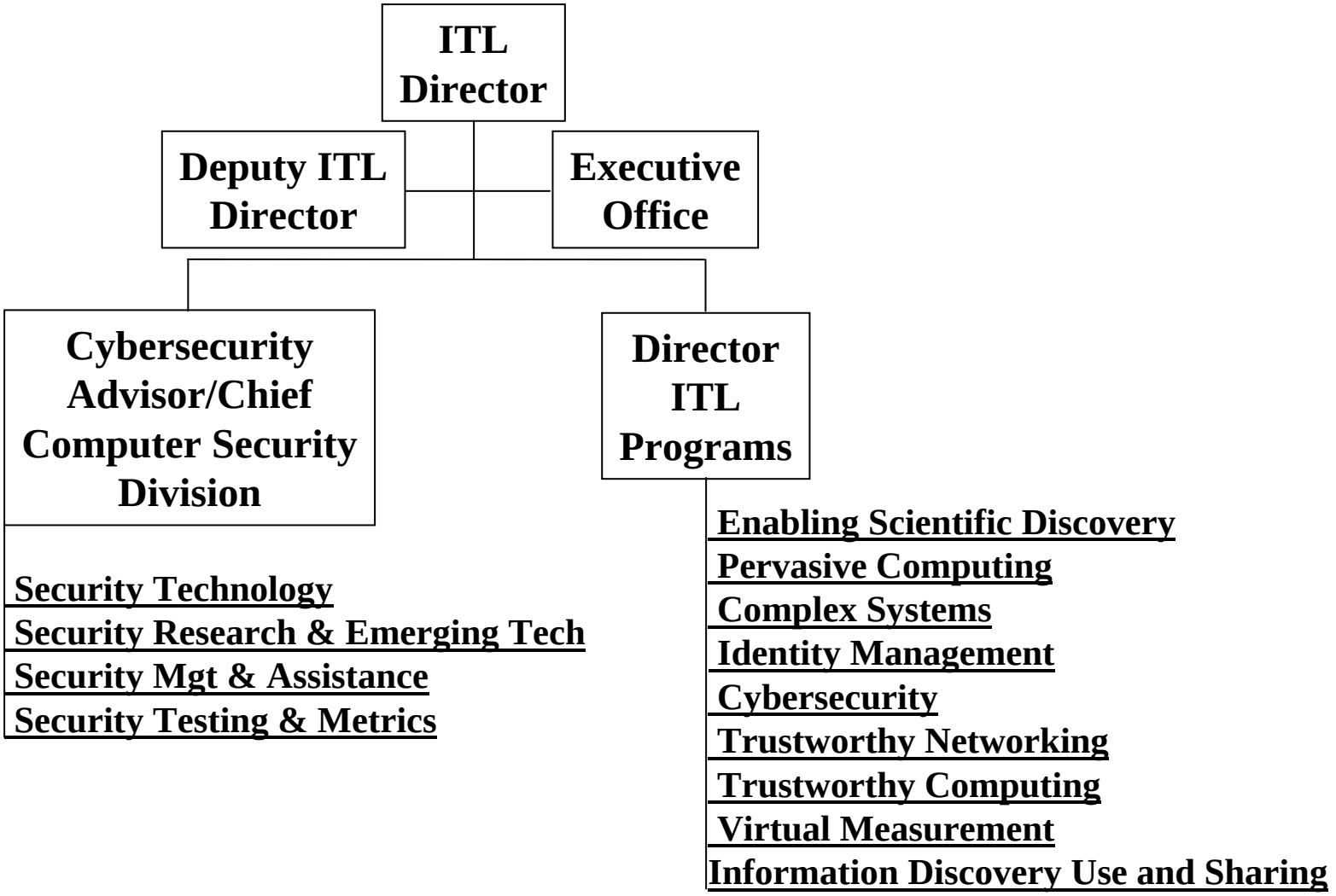
Current Challenges

- Cryptographic Algorithms (Long Range)
  - Public Key Cryptography in Quantum Computing Environment
  - Symmetric Key Management for Large and Complex Communications Environments
  - Light Footprint Algorithms
- Access Control
  - Login Passwords, Tokens, and Biometrics
  - Single Sign-on
  - Electronic Physical Access Control
  - Policy Machine
  - Vendor Support
  - Product Assessment vs Module Validation
- Harmonization of Federal standards and guidelines with IC/NSS requirements
- Defense against electronic identity fraud
- Balancing standards mission against implementation support requirements

Division Structure

- Division Office
  - Overall division management
  - Coordination of support to ITL programs
  - 4 Federal employees
- Security Technology
  - Security mechanisms' development, standards, and guidelines
  - 18 Federal employees, 5 Guest Researchers
- Security Research and Emerging Technologies
  - Security applications research, security guidelines, security checklists
  - 19 Federal employees, 6 Guest Researchers
- Security Management and Assistance
  - Security Management standards, guidelines, and outreach
  - 17 Federal employees
- Security Testing and Metrics
  - Cryptographic algorithm module validation program management
  - 11 Federal employees

ITL Cybersecurity Organization



IT Security Mechanisms

Goal: Develop and improve mechanisms to protect the integrity, confidentiality, and authenticity of Federal agency information by developing security mechanisms, standards, testing methods, and support infrastructure requirements and methods.

Programs:

- Security Mechanism Standards Toolkits
  - –Cryptographic Standards
  - –Password Mechanisms
- Cryptographic Key Infrastructures
- Develop measures of effectiveness
- Applications Support
  - –E-Authentication
  - –Voting Systems (with SDCT)

FY07 Staff: 18 Employees, 5 Guest Researchers

Basis for Program Priority:

•Help America Vote Act (10/02)

•PITAC Cyber Security Report lists authentication technologies at top of R&D priority list (2/05).

•NIST FY 2007 Budget Request cites encryption standards technical expertise and response to statutory assignments as having saved industry $1 billion (2/06).

•CSIA *Federal Plan for Cyber Security and Information Assurance R&*D lists authentication and cryptography among its top funding priorities (4/06).

FY07 Priorities: Secure Hash Algorithm replacement research, Password Guideline Revision, E-Authentication and Key Management Guidelines.

Products: Federal Information Processing Standards, NIST Special Publications (SPs), ANSI & INCITS Standards, ISO/IEC Standards, IEEE Standards, IETF RFCs.

Security Research and Emerging Technologies Group

IT Security Research and Applications

Goal:

Devise advanced security methods, tools, and guidelines through conducting near and midterm security research.

Programs:

- Security Research
  - Access Control and Policy Management
  - Automation Assistance to FISMA Reporting (Security Content Automation)
  - Ad hoc Networks and Wireless Security
  - Combinatorial Testing (Pseudo exhaustive)
  - Quantum Crypto Protocols
- National Vulnerability Database
- Protection of Personally Identifiable Information (PII)
- Security Related Protocol Standards.
- Identity Management (PIV, Smart Cards and Biometrics)
- Operating Systems and Applications Security Hardening Guidelines
- Technical Guidelines for Federal Agencies

FY07 Staff: 19 Employees, 1 Student, 6 Guest Researchers

Basis for Program Priority:

- Research, modeling, and reference implementation builds vital competencies
- FISMA, Cyber Security R&D Act, and prior legislation directs NIST to conduct research in support of its national role of providing security standards and guidelines to Federal Agencies (12/02).
- PITAC Cyber Security Report (2/05)
- CSIA *Federal Plan for Cyber Security and Information Assurance R&*D lists Access Control and Privilege Management as a top national priority (4/06).
- HSPD-7 and HSPD-12 are driving the most resource intensive FY07 activities.

FY07 Priorities: Security metrics program initiation, security configuration guidelines, wireless security, secure use of RFIDs, security in quantum computing environments, electronic identity standards and guidelines.

Products: FIPS, NIST Special Pubs, Formal Security Models, Open Software, Reference & Prototype Implementations, Journal and Conference Papers, ANSI & INCITS Standards, IETF RFCs, Patents.

Security Management and Assistance Group

IT Security Management

Goal:

Provide computer security guidelines to ensure sensitive government information technology systems and networks are sufficiently secure to meet the needs of government agencies and the general public.

Programs:

- Standards and Guidelines
- Outreach
- Additional Initiatives

FY07 Staff: 17 Employees

Basis for Program Priority:

- The FISMA Implementation Project was established in January 2003 to produce security standards and guidelines required by FISMA.

Basis for Program Priority (continued):

- Cyber Security: Innovative Technologies for National Security are identified in the Research Initiatives for President's Innovation Agenda.
- The Information Security and Privacy Advisory Board founded in accordance with 15 U.S.C. 278g-4, pursuant to the Federal Advisory Committee Act, 5 U.S.C.
- Appendix III to OMB Circular No. A-130 charges the Secretary of Commerce to develop and issue appropriate standards and guidelines for the security of sensitive information in Federal computer systems.

FY07 Priorities: FISMA implementation guidelines and support, product security assessment requirements development, update of guideline documents.

Products: Federal Information Processing Standards, NIST Special Publications, NIST Interagency Reports.

Security Testing and Metrics Group

Cryptographic Testing &Validation

Goal:

Improve the security and technical quality of cryptographic products needed by Federal agencies (U.S., Canada, and UK) and industry, by developing standards, test methods & validation criteria, and the accreditation of independent third party testing laboratories.

Programs:

- Cryptographic Module Validation Program (CMVP)
- Cryptographic Algorithm Validation Program (CAVP)
- Test tools and algorithm & protocol test suite development
- Cryptographic Module Testing Laboratory and Personal Identification Verification laboratory accreditation
- Security Testing Research

FY07 Staff: 11 Employees

Basis for Program Priority:

- NIST FY 2007 Budget Request cites encryption standards technical expertise and response to statutory assignments as having saved industry $1 billion (2/06).
- CSIA *Federal Plan for Cyber Security and Information Assurance R&*D lists authentication and cryptography among its top funding priorities (4/06).
- ISO19790: Security Requirements for Cryptographic Modules accepted as an international standard (5/06).

FY07 Priorities: FIPS 140-3 publication, maintain effectiveness of cryptographic algorithm and module validation programs, incorporate NIST personal identity verification program test validation, establish basis to support future NVLAP-based product assessment validation activities.

Products: FIPS 140-2, ISO Standards, Implementation Guidelines, cryptographic module and algorithm validation, laboratory accreditation, test tools, algorithm & protocol test suites.

FY06 Formal NIST Publications
(See csrc.nist.gov for latest publications)

- Special Publication 800-68: *Guidance for Securing Microsoft Windows XP Systems for IT Professionals: A NIST Security Configuration Checklist*, October 2005
- Special Publication 800-87: *Codes for the Identification of Federal and Federally-Assisted Organizations*, October 2005
- NISTIR 7250: Cell Phone Forensic Tools: An Overview and Analysis," October 2005
- Special Publication 800-40 Version 2, *Creating a Patch and Vulnerability Management Program*, November 2005
- Special Publication 800-83: *Guide to Malware Incident Prevention and Handling*, November 2005
- Special Publication 800-21-1 Second Edition: *Guideline for Implementing Cryptography in the Federal Government*, December 2005
- Special Publication 800-77: *Guide to IPsec VPNs*, December 2005
- NISTIR 7275: "Specification for the Extensible Configuration Checklist Description Format (XCCDF)," January 2006
- NISTIR 7284: "Personal Identity Verification Card Management Report", January 2006
- NISTIR 7285"Computer Security Division - 2005 Annual Report", February 2006
- Special Publication 800-18 Rev. 1, *Guide for Developing Security Plans for Federal Information Systems*, February 2006
- Special Publication 800-76: *Biometric Data Specification for Personal Identity Verification*, February 2006

FY06 Formal NIST Publications (Continued)

- Special Publication 800-56A: *Recommendation for Pair-Wise Key Establishment Schemes Using Discrete Logarithm Cryptography*, March 2006
- Special Publication 800-73 Revision 1: *Interfaces for Personal Identity Verification*, March 2006
- FIPS 200: *Minimum Security Requirements for Federal Information and Information Systems*, March 2006
- NISTIR 7290: "Fingerprint Identification and Mobile Handheld Devices: An Overview and Implementation", March 2006
- Special Publication 800-63 (Version 1.0.2): *Electronic Authentication Guideline: Recommendations of the National Institute of Standards and Technology*, April 2006
- Special Publication 800-85A: *PIV Card Application and Middleware Interface Test Guidelines* (Special Publication 800-73 compliance), April 2006
- NISTIR 7298: "Glossary of Key Information Security Terms," May 2006
- Special Publication 800-81: *Secure Domain Name System (DNS) Deployment Guide*, May 2006
- FIPS 201-1: *Personal Identity Verification (PIV) of Federal Employees and Contractors*, Updated June 2006
- Special Publication 800-90: *Recommendation for Random Number Generation Using Deterministic Random Bit Generators*, June 2006
- NISTIR 7313: "5th Annual PKI R&D Workshop Proceedings: Making PKI Easy to Use", July 2006

FY06 Formal NIST Publications (Continued)

- Special Publication 800-85B: *PIV Data Model Test Guidelines*, July 2006
- NISTIR 7337: “Personal Identity Verification Demonstration Summary,” August 2006
- Special Publication 800-86: *Guide to Integrating Forensic Techniques into Incident Response*, August 2006
- NISTIR 7316: "Assessment of Access Control Systems", September 2006
- Special Publication 800-69: *Guidance for Securing Microsoft Windows XP Home Edition: A NIST Security Configuration Checklist*, September 2006
- Special Publication 800-84: *Guide to Test, Training, and Exercise Programs for IT Plans and Capabilities*, September 2006
- Special Publication 800-88: *Guidelines for Media Sanitization*, September 2006
- Special Publication 800-92: *Guide to Computer Security Log Management*, September 2006
- Special Publication 800-96: *PIV Card/Reader Interoperability Guidelines*, September 2006
- Published Drafts [Public Review]: 16 Special Publications (plus two FIPS revisions)

FY07 Formal NIST Publications

- Special Publication 800-100: *Information Security Handbook: A Guide for Managers, October 2006*
- Draft Special Publication 800-103: *An Ontology of Identity Credentials, Part 1: Background and Formulation, October 2006*
- Special Publication 800-89: *Recommendation for Obtaining Assurances for Digital Signature Applications, November 2006*
- Special Publication 800-53 Rev 1*: Recommended Security Controls for Federal Information Systems, December 2006*
- Special Publication 800-76-1: *Biometric Data Specification for Personal Identity Verification, January 2007*
- Draft Special Publication 800-104: *A Scheme for PIV Visual Card Topography, January 2007*
- *NISTIR 7358: Program Review for Information Security Management Assistance (PRISMA), January 2007*
- *NISTIR 7359: Information Security Guide for Government Executives, January 2007*
- Special Publication 800-45 Ver 2: *Guidelines on Electronic Mail Security, February 2007*
- Special Publication 800-94: *Guide to Intrusion Detection and Prevention Systems (IDPS), February 2007*
- Special Publication 800-97: *Establishing Wireless Robust Security Networks: A Guide to IEEE 802.11i, February 2007*
- Special Publication 800-98: *Guidelines for Securing Radio Frequency Identification (RFID) Systems, April 2007*
- *NISTIR 7399: Computer Security Division – 2006 Annual Report, April 2007*
- Special Publication 800-101: *Guidelines on Cell Phone Forensics, May 2007*
- Draft Special Publication 800-44 Ver 2: *Guidelines on Securing Public Web Servers, May 2007*
- *Draft Special Publication 800-53A: Guide for Assessing the Security Controls in Federal Information Systems, May 2007*
- *NISTIR 7275 Rev 2: Specification for the Extensible Configuration Checklist Description Format (XCCDF) Version 1.1.3, May 2007*
- Special Publcation 800-54, *Border Gateway Protocol* Security, June 2007
- Special Publication 800-95: *Guide to Secure Web Services, June 2007*

FY07 Formal NIST Publications

- Draft Special Publication 800-46 Ver 2: *User's Guide to Securing External Devices for Telework and Remote Access,* June 2007
- Draft Special Publication 800-82 (Second Public Comment): *Guide to Supervisory Control and Data Acquisition (SCADA) and Industrial Control Systems Security,* June 2007
- Draft FIPS 140-3, *Security Requirements for Cryptographic Modules*, July 2007
- Draft Special Publication 800-41 Ver 2: *Guidelines on Firewalls and Firewall Policy,* July 2007
- Draft Special Publication 800-70 Ver 2: *NIST National Checklist Program for IT Products—Guidelines for Checklist Users and Developers*, July 2007
- Draft Special Publication 800-99: *Guide to Information Technology Security Standards and Guidelines, July 2007*
- Draft Special Publication 800-110: *FISMA Reference Model, July 2007*
- Draft Special Publication 106, *Randomized Hashing Digital Signatures*, July 2007
- Draft Special Publication 107, *Recommendation for Using Approved Hash Algorithms,* July 2007
- Draft Special Publication 800-111: *Guide to Storage Encryption Technologies for End User Devices,* August 2007
- Draft Special Publication 800-113: *Guide to SSL VPNs,* August 2007
- Draft Special Publication 800-48 Ver 2: *Wireless Network Security: IEEE 802.11a/b/g/n, Bluetooth, and Other Technologies,* August 2007
- *NISTIR xxxx: Guide to the Common Vulnerability Scoring System (CVSS) Version 2.0, August 2007*
- Draft Special Publication 800-28 Ver 2: *Guidelines on Active Content and Mobile Code, August 2007*
- Draft Special Publication 800-xx: *The Security Content Automation Protocol (SCAP), August 2007*
- Draft Special Publication 800-xx: *The Information Security Automation Program (ISAP), August 2007*
- Draft Special Publication 800-xx: *Guide to Storage Encryption Technologies for Enterprises, August 2007*
- Draft Special Publication 800-xx: *Guide to Securing Enterprise Remote Access Technologies for Telework, August 2007*
- Draft Special Publication 800-42 Ver 2: *Technical Guide to Information Security Testing, September 2007*
- Draft Special Publication 800-30 Rev 1*: Risk Assessment for Information Technology Systems, September 2007*
- Draft Special Publication 800-xx: *Guide to Protecting Personally Identifiable Information*, 2008

Thank You!

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